

***Nymphoides simulans* (Menyanthaceae): a new species from northern Australia**

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Abstract

Nymphoides simulans Aston *sp. nov.*, a white-flowered species from northern Queensland and north-eastern Northern Territory, is described and its diagnostic features are discussed. The species is almost identical with *N. spongiosa* Aston in leaves and seeds, but differs from that species in several floral features.

Introduction

This paper is the sixth in a series connected to a revision of *Nymphoides* Séguier in Australia. Ten new species have been published in prior papers (Aston 1982, 1984, 1986, 1987, 1997) but material of the species now being described has been set aside for some time awaiting fuller investigation. Recent examination of seeds by Scanning Electron Microscope (Aston, in preparation) has assisted in clarifying the taxon's status. *Nymphoides simulans* Aston belongs in the informal 'indica group' defined in Aston (1982, p. 35).

Taxonomy

Nymphoides simulans Aston, *sp. nov.*

Nymphoides spongiosa Aston *simulans* arcte habitu, foliis, fructis et seminibus, sed floribus 4-partitis (interdum 3-partitis vel 5-partitis) homostylis, antheris stigmata aequantibus praecipue differt.

Type: Queensland, Cape York Peninsula, 3.2 km E of "Musgrave" along the "Musgrave" to "Marina Plains" road, 13 May 1982, *H.I. Aston* 2255 (holotype MEL 612170; isotypes BRI, MEL 612171, MEL spirit).

Apparently annual. *Petiole-like stems* few to many (>20), arising from the plant base, slender, flexuose, 3.5–42 cm long, <1mm diam. *True petiole* apparently absent. *Leaf blades* floating, elliptic to elliptic-oblong to broad-ovate in outline, deeply cordate (the lobes c. (25%–)40%–50%–(55%) of the total blade length and separated by a sinus of (20°–)30°–75°–(100°) angle), obtuse, entire, (1.0–)2.0–3.5(–4.2) cm long, (0.7–)1.5–2.5(–3.5) cm wide, deep green or maroon-purple and shining above, white-translucent and spongy beneath; spongy tissue smooth-surfaced, not rugose. *Juvenile leaves* basal, submerged, very thin-textured, light green and almost translucent, not spongy; blades variable in shape, narrow-elliptic, oblanceolate to obovate, or broad-ovate to deltoid, c. 7–22 mm long, tapered into dorso-ventrally flattened petioles c. 5–35 mm long. *Inflorescence* as for the 'indica group'; pedicels subtended by ± broad-ovate, membranous, translucent bracts c. 2–3.5 mm long. *Pedicels* 5–11(–20), emerging erect through the sinus when in flower, very slender, 4–15(–20) mm long, < 0.5 mm diam. *Flowers* (3)4(5)-partite, homostylous. *Calyx lobes* lanceolate, acute, membranous, mostly purplish-translucent, often slightly outcurved at the apex when in fruit, 1.6–2.7 mm long. *Corolla* (4–)5–7 mm span, white with a yellow throat. *Corolla lobes* narrowly oblanceolate (almost linear) to broadly oblanceolate; mid-section glabrous except for c. 8–20 fine papillae spaced in a transverse band just above its base, the band sometimes discontinuous, the papillae then only at the sides or at the sides and centre of the band position; central longitudinal keel

or wing on mid-section absent; side-wings extending from the apex of the lobe to half or two-thirds of the lobe length, varying from near-entire with 1-few crenulations or short laciniae at the apex, to strongly crenulate or with several deep-cut laciniae spaced along the whole margin. *Corolla tube* papillae short, each several cells long, clustered c. 8-12 together at the summit of a short common stalk, or the cluster sometimes sessile. *Stamens* with straight filaments 0.50-0.85 mm long; anthers versatile, \pm broad-obloid with the

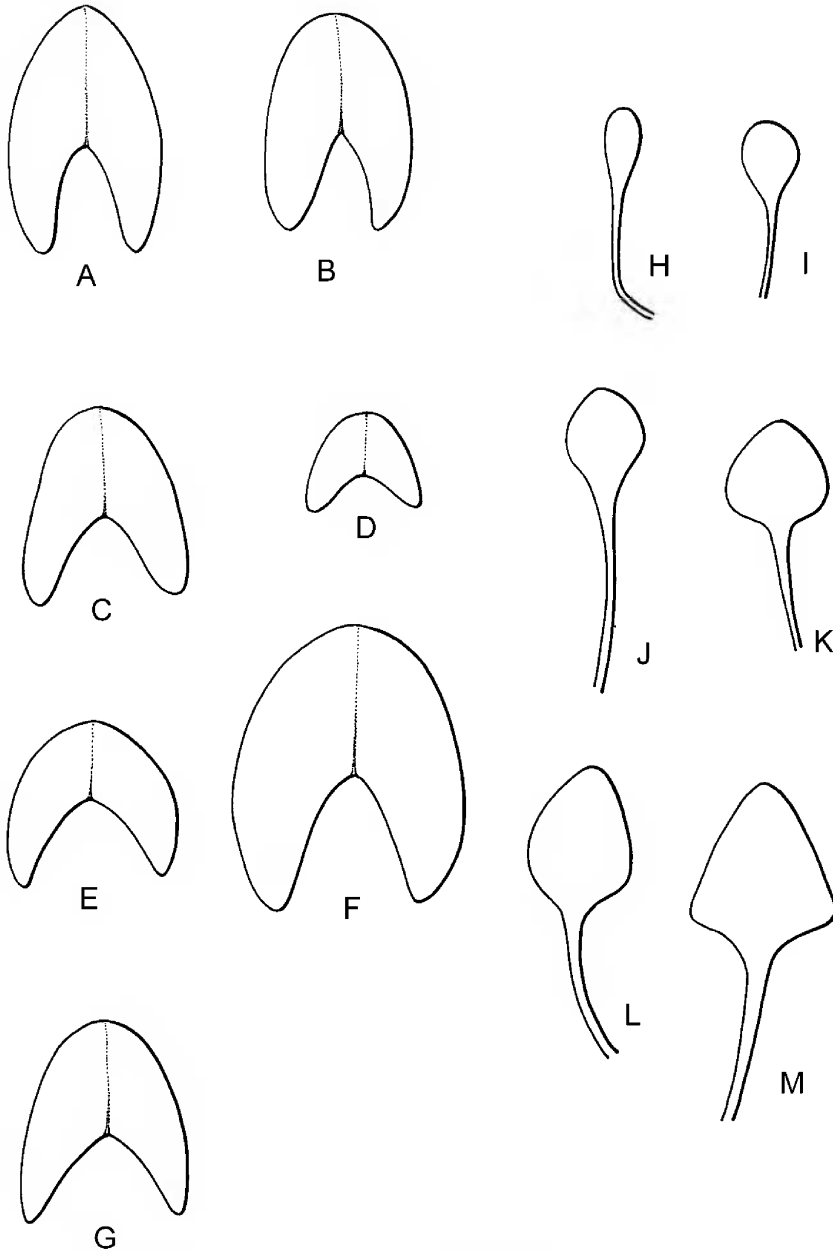


Figure 1. *Nymphoides simulans*. **A-G** Outline of floating blades of mature leaves, $\times 1$: **A** (Craven 3203), **B-D** (Aston 2251), **E-F** (Aston 2247), **G** (Aston 2255). **H-M** Outline of juvenile leaves, $\times 1$: **H-K** (Aston 2255), **L-M** (Craven 3203).

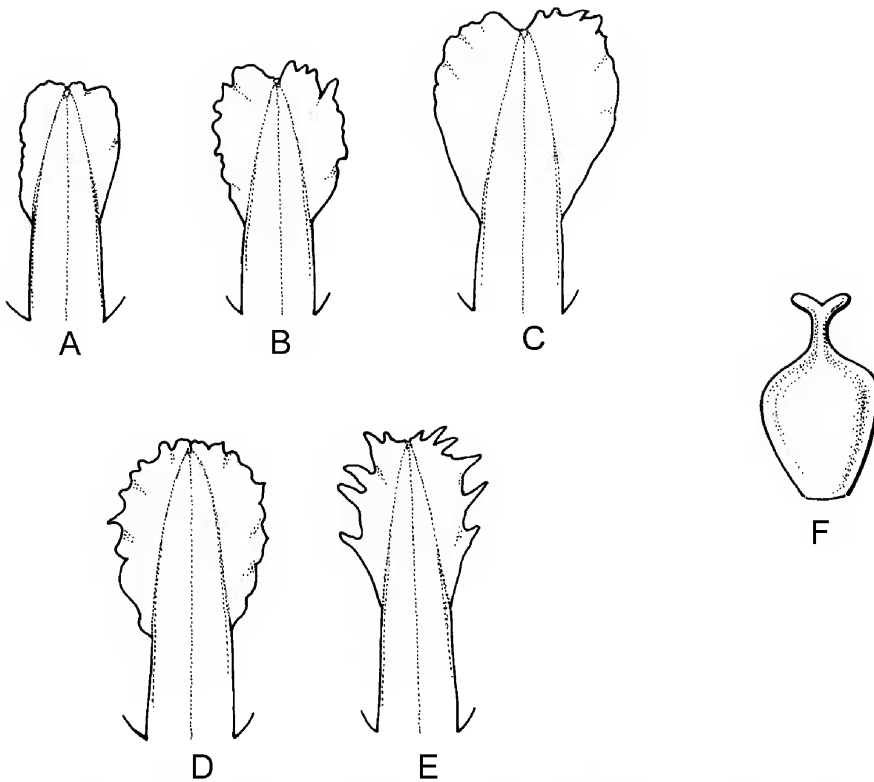


Figure 2. *Nymphoides simulans*. **A-E** Outline of corolla lobes to show the crenulate to lacinate wing margins, $\times 15$: **A-B** (Aston 2247), **C-E** (Aston 2255). **F** Outline of gynoecium showing ovary shape and gentle contraction into the style, $\times 20$ (Aston 2255).

length slightly $>$ to slightly $<$ width, (0.25-)0.30-0.45 mm long, (0.225-)0.25-0.40 mm wide. *Gynoecium* c. (1.20-)1.3-1.5(-1.7) mm long; ovary obovoid to broadly obovoid, the shoulders at the summit contracted gently rather than abruptly into the style; placentas 2, short, about one-quarter to one-third of the capsule length, positioned centrally down the ovary wall; ovules c. 5-19; style (0.15-)0.20-0.25(-0.30) mm long; stigmas 2, each a broad, papillate, slightly lobed wing c. (0.20-)0.25(-0.35) mm long. *Capsule* broadly obovoid or sometimes broadly obloid, from a little less than to equal to or rarely greater than the calyx, 2.0-2.8 mm long, 1.4-2.05 mm wide. *Seeds* (4-)7-19 per capsule; body of seed near-globose but slightly to moderately laterally compressed, 0.575-0.85 mm long, 0.55-0.775 mm wide, 0.35-0.60 mm thick, cream-straw to light brown-grey or brown-black when mature, usually densely covered with very short, usually broadly conical but obtuse, occasionally convex, tubercles which arise one from each cell and give the seed surface a densely granular appearance; seed faces sometimes smooth, the tubercles present only on or close to the seed edges and gradually diminishing in length from the edge towards the face; basal caruncle present, circular, pale, typically thick and conspicuous, sometimes thin. (Figs 1 & 2).

Phenology: Flowers and fruits recorded April to June.

Etymology: The specific epithet refers to the similarity of *N. simulans* to *N. spongiosa* except in floral characters.

Distribution and Conservation Status: Known from the Northern Territory and Queensland, north of 18°S latitude and east of 132°E longitude. Apparently most prolific

in Queensland, on Cape York Peninsula, particularly in the “Musgrave” to Hann River region but extending south to about Mt Molloy. There are only four widespread records from the remainder of the known range, namely two from the East and South Alligator River regions of the Northern Territory, and two from the southern edge of the Gulf of Carpentaria (Bing Bong, N.T. and near Westmoreland, Qld). *Nymphoides simulans* is probably well under-collected across its wide geographical range and is apparently under no particular conservation threat at this time.

Habitat: Occurs in still, sometimes gently flowing, temporary fresh waters to 50 cm deep in seasonally flooded swamps, lagoons, or roadside ditches, persisting for a while on saturated marginal zones as waters recede. Substrate usually sand or sandy gravel, sometimes mud. Recorded “in a sedge swamp through a *Melaleuca* flat” (Aston 2259) and in “*Melaleuca viridiflora* closed woodland on a depression” (A. V. Slee et al 2880). In two populations (Aston 2247 and Aston 2255) *N. simulans* occurred intermingled with *N. triangularis* Aston and in another population (Aston 2251) it was intermingled with *N. parvifolia* (Griseb.) Kuntze.

Notes: *Nymphoides simulans* resembles *N. spongiosa* (Aston 1982, pp. 45-48, fig. 4) very closely in habit, leaf, fruit and seed, but differs chiefly in having 4-partite flowers (occasionally 3- or 5-partite), and in being homostylous with anthers and stigmas held at the same level at anthesis. There are also other floral differences. Flowers which I have seen either in the field, or in spirit, or softened from dried collections, are smaller (corolla span c. 5-7 mm) than those from *N. spongiosa* (10-20 mm, occasionally as short as 7 mm), and have the wings of the corolla lobes usually shorter in relation to the lobe length, narrower, and crenulate to lacinate rather than entire. Anthers of *N. simulans* are smaller (0.25-0.45 mm long) and squatter, sometimes even wider than long, whereas those of *N. spongiosa* are about 0.5-0.7 mm long and 1.5 times as long as broad. The ovary of *N. simulans* also differs, that of *N. spongiosa* being more globular and abruptly contracted into the style.

Representative Specimens Examined (17 collections examined): **Queensland:** Cape York Peninsula, 5.3 km NW of the Hann River crossing of the Laura to Coen road, 11 May 1982, H.I.Aston 2247 (MEL); 11.6 km SE of the Morehead River crossing of the Laura to Coen road, 12 May 1982, H.I.Aston 2251 (BRI, MEL); 5.4 km S of Musgrave along the Laura to Coen road, 14 May 1982, H.I.Aston 2264 (BRI, MEL, NSW); About 140 km S of Cooktown on the Cairns road, 9 April 1975, L.A.Craven 3203 (BRI, CANB, MEL); “Westmoreland” homestead lagoon, 11 May 1974, S.Jacobs 1547 (MEL, NSW). **Northern Territory:** Bing Bong Station, 8 June 1971, C.R.Dunlop 2250 (DNA); Grown [at CSIRO Berrimah] from soil collected on East Alligator floodplain, 12°14' S, 133°01' E, 29 April 1994, S.Seddifield s.n. (DNA).

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